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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/020,404 | 12/14/2001 | Thomas M. Laney | 83682AEK | 8712 |

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| EXAMINER | |
|---|---|
| PATTERSON, MARC A | |
| **ART UNIT** | **PAPER NUMBER** |
| 1772 | |

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/020,404 | LANEY ET AL. |
| | Examiner | Art Unit |
| | Marc A Patterson | 1772 |

cf

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *24 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-20,22-31 and 35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20,22-31 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

NEW REJECTIONS

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 – 20, 22 – 31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al (U.S. Patent No. 6,057,961).

With regard to Claims 1 – 2, 8 – 14, 29 and 35, Allen et al disclose a light diffuser (film which contains light scatterers, therefore diffusers; column 22, lines 50 – 51) comprising a polymeric film (polyethylene naphthalate, therefore a polyester; column 22, lines 63 – 66) wherein the film comprises a plurality of layers (multilayer, therefore comprising two layers; column 22, lines 40 – 41) having a void geometry (therefore having a circular cross section in a plane perpendicular to the direction of light travel; column 22, lines 3 – 5) in which the void frequency varies between at least two layers (the number of scatterers changes, therefore arranged in increasing or decreasing size and frequency of voids; column 22, lines 50 – 51). Allen et al fail to disclose a film in which the frequency of voids varies by at least 28% between layers and a light transmission efficiency of greater than 80% at 500 nm and a variation sufficient to increase the light transmission efficiency by at least 10% at 500 nm compared to a single voided layer of the same thickness of the layers but with only one frequency or void size. However, Allen et al disclose a film in which the frequency of voids varies between layers (the

number of scatterers changes, and is not substantially equal for the two layers; column 22, lines 50 – 51) and a film in which the volume fraction of voids (volume fraction of the disperse phase; column 12, lines 51 – 52) is varied to obtain desired transmission properties for a given application (column 12, lines 54 – 59) at a desired wavelength (column 12, line 49).

Therefore, one of ordinary skill in the art would have recognized the utility of varying the frequency of voids to obtain desired transmission properties for a given application, and the transmission properties would therefore be readily determined through routine optimization of the frequency of voids by one having ordinary skill in the art depending on the desired end use of the product.

It therefore would be obvious for one of ordinary skill in the art to vary the frequency of voids in order to obtain desired transmission properties, including light transmission efficiency at 500 nm and therefore a desired transmission efficiency compared to a single voided layer of the same thickness of the layers but with only one frequency or void size, since the transmission properties would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Allen et al.

With regard to Claims 3 and 15, the film also comprises a non – voided layer (skin layer; column 18, lines 47 – 51).

With regard to Claim 4, the voided and non – voided layers are integral (laminated; column 22, lines 46 – 47).

With regard to Claim 5, the non – voided layer further comprises addenda (other non – voided layers (column 18, lines 47 – 52).

With regard to Claim 6, as stated above the voided and non – voided layers are integral; the claimed aspect of two voided layer separated by a non – voided layer therefore reads on Allen et al.

With regard to Claims 16 and 19, the voids contain air (column 22, lines 5 – 14); the refractive index between the thermoplastic material and the voids is therefore greater than 0.2.

With regard to Claim 28, the thermoplastic layer comprises polyolefin polymer (column 17, lines 14 – 22).

With regard to Claims 7, 20 – 27 and 30 – 31, Allen et al fail to disclose a diffuser having a diffuse light transmission efficiency improved by 10% and an elastic modulus of greater than 500 millipascal, and a diffuser having a diffuse light transmission efficiency of greater than 87%, and thermoplastic layers which contain greater than 4 index of refraction changes greater than 0.20 parallel to the direction of travel of light, and voids having an average volume of between 8 and 42 cubic micrometers over an area of 1 square centimeter, and a thickness of less than 250 micrometers. However, Allen et al teach a diffuser in which transmission efficiency is dependent on volume fraction (column 12, lines 60 – 67) having a modulus of at least 1 millipascal (the film has a Young's modulus; column 19, line 37) and a diffuser which contains at least 1 index of refraction change greater than 0.20 parallel to the direction of travel of light (column 9, lines 49 – 50) and voids having an average volume corresponding to one – thirtieth the wavelength of the light in the medium of interest (column 10, lines 1 – 4) and a thickness of 625 microns (column 37, lines 46 – 53) and a film in which the properties are varied to obtain desired transmission properties for a given application (column 12, lines 54 – 59).

Therefore one of ordinary skill in the art would have recognized the utility of varying the elastic modulus, and number of index of refraction changes, and volume of voids and thickness to obtain desired transmission properties for a given application. Therefore, the transmission properties would be readily determined through routine optimization of the frequency of voids by one having ordinary skill in the art depending on the desired end use of the product.

It therefore would be obvious for one of ordinary skill in the art to vary elastic modulus, and number of index of refraction changes, and volume of voids and thickness in order to obtain desired transmission properties, since the transmission properties would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Allen et al.

With regard to Claims 17 – 18, the voids are formed by a disperse phase which is crosslinked (column 14, lines 1 – 5) and spherical (core and shell structure, therefore also beads; column 14, lines 14 – 17).

With regard to Claims 30 – 31, Allen et al fail to disclose a particle size of between 0.30 and 1.7 micrometers. However, Allen et al disclose a particle size of one – thirtieth the wavelength of the light in the medium of interest (column 10, lines 1 – 4). Therefore, the particle size would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end use of the product. It therefore would be obvious for one of ordinary skill in the art to vary the particle size, since the particle size would be readily determined through routine optimization by one having ordinary skill in the art depending on the desired end result as shown by Allen et al, in the absence of unexpected results. *In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980).*

ANSWERS TO APPLICANT'S ARGUMENTS

3. Applicant's arguments regarding the 35 U.S.C. 103(a) rejection of Claims 1 – 30 as being unpatentable over Allen et al (U.S. Patent No. 6,057,961), of record in the previous Action, have been carefully considered but have not been found to be persuasive for the reasons set forth below.

Applicant argues, on page 9 of Paper No. 15, that because the Allen et al optical element is a reflective polarizer, at least half of the light is reflected; therefore, Applicant argues, the element cannot satisfy the light transmission efficiency of the present claims; further, Applicant argues, the presence of air voids would serve to prevent some of the desired light from being transmitted.

However, Allen et al is not limited to an optical element that is a reflective polarizer; Allen teaches optical bodies that are used for a variety of applications, including reflective polarizers (column 4, lines 29 – 33) and teaches that the transmission properties and reflection properties are determined by volume fraction of the disperse phase and other factors depending on the desired application (column 12, lines 51 – 59). Allen et al is therefore clearly not limited to an optical element that is a reflective polarizer or to an element that reflects at least half of incident light.

Applicant also argues on page 9 that the presence of voids would serve to prevent some of the desired light from being transmitted, further increasing the reflection.

However, it is not taught by Allen et al that the presence of voids would serve to prevent some of the desired light from being transmitted; furthermore, voids are claimed in the present

invention, and it is therefore not clear that reflection would be increased for Allen et al any more than it is for the claimed invention.

Applicant also argues on page 9 that according to the Summary of the Invention, Allen et al is directed to a reflective polarizer and therefore to a reflective film.

However, as stated above, Allen et al is therefore clearly not limited to an optical element that is a reflective polarizer or to an element that reflects at least half of incident light.

Applicant also argues on page 9 that Allen et al notes at column 2, line 62 to column 3, lines 13 that voids are generally undesirable because they interfere with the reflective polarization, and that Allen does not suggest multiple layers having the claimed variation.

However, as stated above, Allen et al disclose a film in which the frequency of voids varies between layers (the number of scatterers changes, and is not substantially equal for the two layers; column 22, lines 41 – 62) and a film in which the volume fraction of voids (volume fraction of the disperse phase; column 12, lines 51 – 52) is varied to obtain desired transmission properties for a given application (column 12, lines 54 – 59) at a desired wavelength (column 12, line 49).

Therefore one of ordinary skill in the art would have recognized the utility of varying the frequency of voids to obtain desired transmission properties for a given application. Therefore, the transmission properties would be readily determined through routine optimization of the frequency of voids by one having ordinary skill in the art depending on the desired end use of the product. Furthermore, it is unclear where Allen et al, in the cited passage, discussed interference with reflective polarization.

Applicant also argues, on page 10, that although Allen et al teach that the dimensions of voids may be controlled there is no suggestion that there may be two or more layers that have different frequencies.

However, as stated above Allen et al does teach that there may be two or more layers that have different frequencies, as Allen et al teaches that the number of scatterers changes, and is not substantially equal for the two layers (column 22, lines 50 – 51).

Applicant also argues on page 10 that the heart of Allen's invention is having two immiscible phases of material, and the presence of voids is an aside; it is therefore not clear that there is a disclosure of multiple voided layers, Applicant argues, and it would be detrimental to employ the limitations of Applicant's invention in the reflective polarizer of Allen et al.

However, as stated above, Allen et al is not limited to a reflective polarizer. Furthermore, Allen et al clearly discloses voids and a film having multiple layers (multilayer, therefore comprising two layers; column 22, lines 50 – 51) as discussed above, and because voids are included in the claimed invention it is not clear that voids would have a detrimental effect on transmission.

## *Conclusion*

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Patterson, whose telephone number is (703) 305-3537. The examiner can normally be reached on Monday through Friday from 8:30 AM to 5:00 PM. If attempts to reach the examiner by phone are unsuccessful, the examiner's supervisor, Harold

Pyon, can be reached at (703) 308-4251. FAX communications should be sent to (703) 872-9310. FAXs received after 4 P.M. will not be processed until the following business day.

Marc A. Patterson, PhD.
Marc Patterson
Art Unit 1772

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772
8/9/04